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BROCHIS BRITSKII, A NEW SPECIES OF PLATED CATFISH FROM THE
UPPER RIO PARAGUAI SYSTEM, BRAZIL
(PISCES, SILURIFORMES, CALLICHTHYIDAE)

H. NIJSSEN & I.J.H. ISBRÜCKER

ABSTRACT

Brochis britskii n.sp. is described and illustrated, and compared with *B. multiradiatus* (Orcés-Villagomez, 1960). The type material originates from the upper Rio Paraguai system, Est. Mato Grosso, Brazil. A key to the species of *Brochis* Cope, 1871, is provided.

INTRODUCTION

While visiting the Museu de Zoologia da Universidade de São Paulo and the Universidade Federal de São Carlos, Estado de São Paulo, Brazil, the junior author found an undescribed species of the genus *Brochis* Cope, 1871. It is herein described as *Brochis britskii*. The species occurs in the upper Paraguai river system in Brazil. *Brochis britskii* appears to be related to *Brochis multiradiatus* (Orcés-V., 1960), with which it shares a higher number of dorsal fin

rays than present in the only other recognised species of the genus, *Brochis splendens* (De Castelnau, 1855).

Brochis multiradiatus was hitherto only known from the type-locality, the Napo river system in Ecuador. The senior author recently participated in collecting additional specimens in the Ucayali river system in Peru. Another specimen from the Madeira river system in Brazil was available. These specimens are included in this paper for comparison with *Brochis britskii*.



Fig. 1. *Brochis britskii* n.sp., paratype from Miranda (MZUSP 26819, SL 73.8 mm). Photo by L.A. van der Laan.

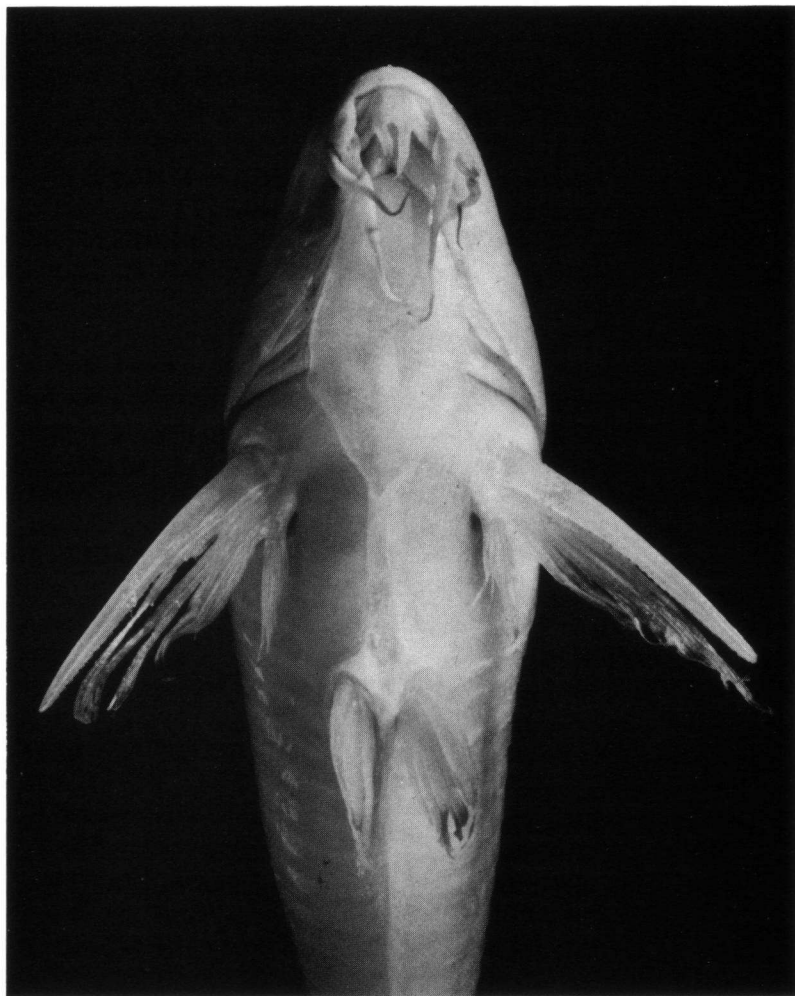


Fig. 2. *Brochis britskii* n.sp., ventral view of the same specimen as in fig. 1. Photo by L.A. van der Laan.

Dr. J.C. Garavello of the Universidade Federal de São Carlos participated in collecting most of the specimens of *Brochis britskii*, and kindly put them at our disposal. Dr. H.A. Britski of the Museu de Zoologia da Universidade de São Paulo (MZUSP) brought the new species to our attention, and permitted us to describe it.

Measurements and counts are taken as defined by Nijssen & Isbrücker (1970: 156, fig. 12).

Financial support for the visit to Brazil (January 1983) was given to the junior author by the Treub Society for Tropical Research (Utrecht), the Artis Fund (Amsterdam), and by the Royal Academy of Sciences of the Netherlands (Amsterdam).

Brochis Cope, 1871

Brochis Cope, 1871: 112 (original diagnosis; no species mentioned); - Cope, 1872: 277 (type-species, by subsequent designation, *Brochis coeruleus* Cope, 1872, a junior synonym of *Callichthys splendens* De Castelnau, 1855 = *Brochis splendens*).

Chaenothorax Cope, 1878: 679-680 (type-species, by original designation, *Chaenothorax bicarinatus* Cope, 1878, a junior synonym of *Callichthys splendens* De Castelnau, 1855 = *Brochis splendens*).

Remarks.-

Brochis is distinguished from the two other genera of the callichthyid subfamily Corydoradinae by its higher number of branched dorsal fin rays (10-18 against 6-8 in *Corydoras* Lacepède, 1803, and *Aspidoras* Von Ihering, 1907).

Key to the species of *Brochis*.-

- 1a. Dorsal fin with 10-12 branched rays.....
Brochis splendens (De Castelnau, 1855)
- 1b. Dorsal fin with 15-18 branched rays..... 2
- 2a. Head not, or incompletely, covered ventrally by a large shield; length bony orbit 4.3-4.8 times in head length; snout long, acute, 1.6 (rarely 1.7) times in head length.....
.....*Brochis multiradiatus* (Orcés-V., 1960)
- 2b. Head covered ventrally by a large shield reaching beyond the tip of the mental barbels; length bony orbit 3.9-4.2 in head length; snout short, rounded, 1.8-1.9 (rarely 1.7 or 2.0) in head length...
.....*Brochis britskii* n.sp.

Brochis britskii n.sp.

(figs. 1-4, 7; table I, A-C)

Material examined.-

MZUSP 26811 (holotype), SL 71.1 mm, MZUSP 26812 (fourteen paratypes), ZMA 107.852 (thirteen paratypes), SL 63.8-78.6 mm, Brazil, Est. Mato Grosso, Lagoas marginais, rodovia Transpantaneira, Poconé (16°15'S, 56°37'W), coll. L.A. Bertello & O. Moreira Filho, IX-1978; MZUSP 25083 (three paratypes), ZMA 107.853 (three paratypes), SL 61.6-67.5 mm, Brazil, Est. Mato Grosso, Lagoa, margem esqu. a + 100 mts. do Rio Cuiabá (Viveiro de Passaros), município de Poconé, coll. CEPIPAM, 15-IX-1977; MZUSP 26819 (one paratype), ZMA 107.854 (one paratype), SL 74.2-78.6 mm, Brazil, Est. Mato Grosso do Sul, Lagoas marginais da rodovia Transpantaneira, município de Miranda (20°10'S, 56°19'W), coll. J.C. Garavello and party (Eq. Ict. DCB-UFSCar), 8/12-XI-1981.

Description.-

Morphometric data are given in table I, A-C. The habitus is shown in figs. 1 and 2.

Data of the holotype, unless specified otherwise: standard length (SL) 71.1 mm; body depth (bd) 32.0 mm; body width (bw) 18.7 mm; length dorsal fin spine (lds) 15.1 mm; length pectoral fin spine (lps) 20.2 mm; head length (HL) 24.4 mm; snout length (sn) 13.1 mm; length bony

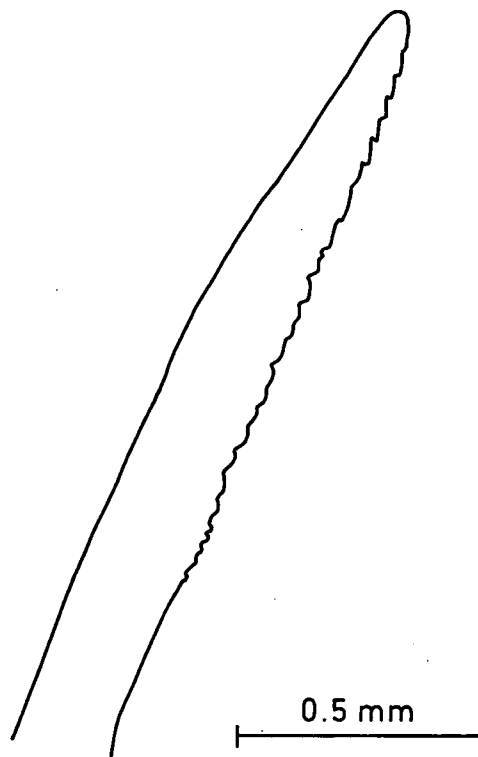


Fig. 3. *Brochis britskii* n.sp., left pectoral fin spine of holotype.

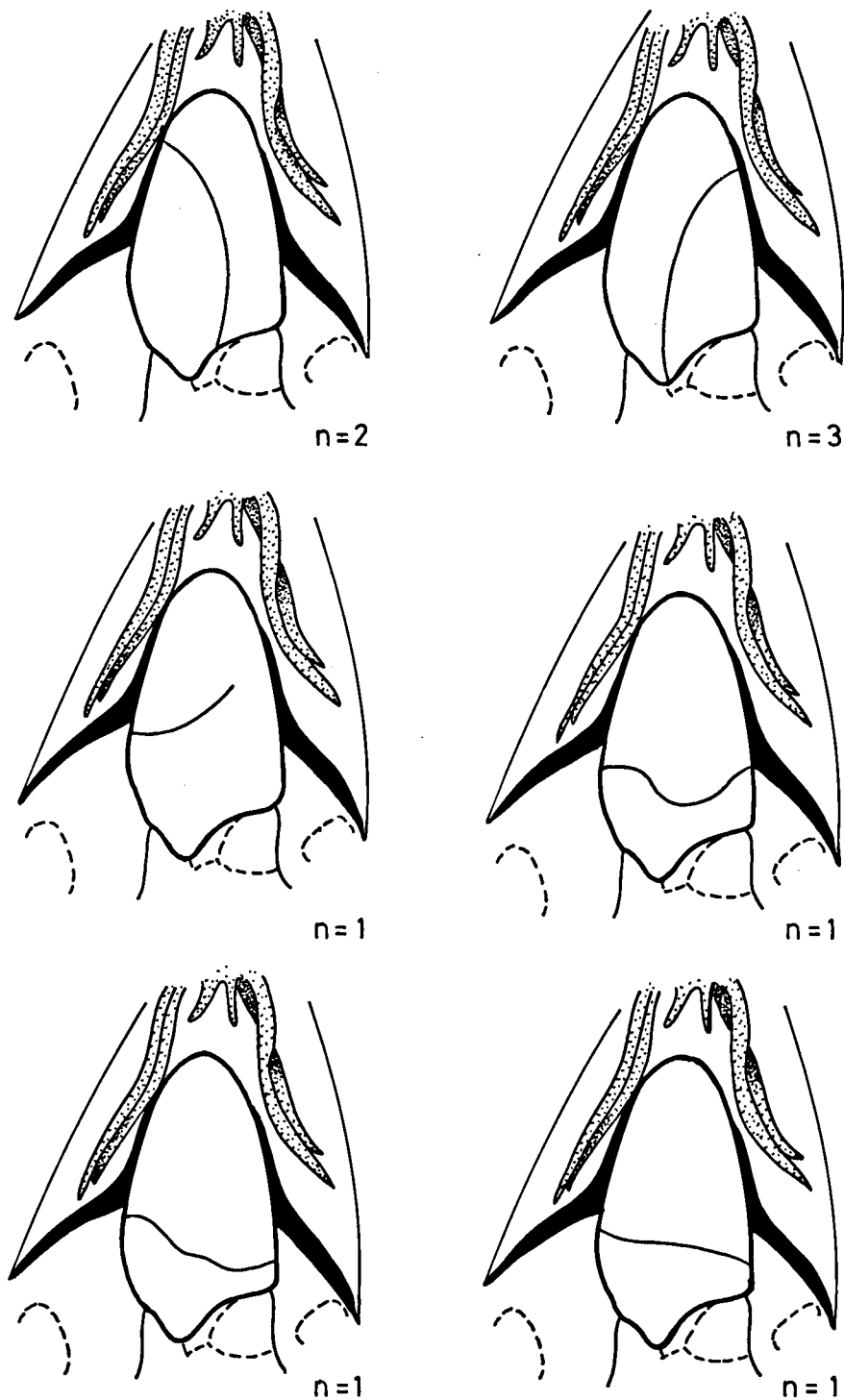


Fig. 4. *Brochis britskii* n.sp.; variation in sutures of the ventral head shield in nine specimens; 27 out of the 36 specimens have no sutures. Solid black = branchiostegal membrane.

orbit (lbo) 5.9 mm; interorbital width (wi) 11.3 mm; width intercoracoid area (ca) 6.0 mm; depth caudal peduncle (dcp) 10.5 mm; fontanel length 6.2 mm; number of dorso- and ventrolateral body scutes (dbs/vbs) 26/23; number of preadipose azygous scutes (pas) 1; D I,17; A ii,5, the last ray split to its base; P_1 i,6; P_2

I,10; C 7/7; two pairs of rictal barbels and one pair of mental barbels. Medial inner edge of pectoral fin spine weakly serrated (fig. 3).

The 35 paratypes (SL 61.6–78.6 mm) have 15 to 18 branched dorsal fin rays, as follows; 3 with 15 rays, 20 with 16, 9 with 17, and 3 with 18 rays. Of ten paratypes, of which the morpho-

metric data are given in table I, five have 25, and five have 26 dorsolateral body scutes; five have 22, four have 23, and one has 24 ventrolateral body scutes. Four have no preadipose scute, six have 1 preadipose scute.

Snout blunt, mouth inferior, the lower jaws shorter than and included under the upper jaws.

The dorso- and ventrolateral body scutes are followed by a series of small scutes on the caudal peduncle, about 5 on the upper as well as on the lower lobe, plus one azygous scutelet dorsally and ventrally.

Supraoccipital process well developed, dorso-medially reaching an azygous, triangular predorsal scute in front of the dorsal fin spinule. First dorsolateral body scutes (nuchal scutes) separated dorsally by the supraoccipital process and the azygous predorsal scute.

Dorsum and sides of head almost completely covered with dermal ossifications. Dermal ossifications almost devoid of odontodes. Tip of snout and adjacent ventral sides (i.e., the rictal barbels) unossified, anteriorly covered with scattered, minute odontodes. Rictal barbels reaching to about a vertical from the middle of eye. Mental barbels much shorter than the rictal barbels, reaching slightly beyond the anterior margin of a large ventral head scute.

Dorsum of head in front of the nostrils covered by an azygous shield, reaching almost to the tip of snout, where a small, squarish naked area is present. Sides of snout anteriorly with a large, triangular scute, dorsally reaching the azygous scute just mentioned, and posteriorly reaching a large scute situated between the anterior margin of the preoperculum and the anteroventral part of the orbital rim. Ventrally this triangular scute reaches the margin of the snout; anteriorly this scute extends over a groove containing the upper rictal barbels.

Coracoids large, completely enclosing bases of the pectoral fins, their ventral margins not meeting medially. Pelvic fins inserted just below first ventrolateral body scute. Intercoracoid area posteriorly almost completely covered with irregular scutelets, reaching about halfway the lower coracoid process; anteriorly the intercoracoid area is covered by a large, oval

shield, reaching beyond the distal tip of the mental barbels (figs. 2 and 4). Twenty-seven out of 36 specimens possess a ventral head shield without sutures. Nine specimens from Poconé show different sutures in the ventral head shield (fig. 4).

Dorsal fin spine slender with minute serrae in the posterior distal half. This spine is preceded by a spinule, which forms part of a fin spine locking mechanism. Dorsal fin base long, separated from the preadipose scute - if present - by one dorsolateral scute. First three branched dorsal fin rays longer than the remaining rays, which become shorter posteriorly.

Adipose fin spine well developed. The adipose fin membrane with vertical posterior margin.

Three procurrent caudal fin rays in front of each lobe. First and last principal caudal fin ray unbranched, embracing 12 branched rays (6 in each lobe). All these rays are segmented. Outer principal caudal fin rays broad, compressed.

First, unbranched pelvic fin ray shorter than the adjacent, branched ray, which is thicker than the four remaining rays.

Anal fin with first two rays unbranched, the second being segmented and thicker than the remaining five branched rays.

Colour in alcohol (fig. 1).-

The specimens from Poconé have a tan ground colour. Dorsum and sides of head with faint greyish pigment. The nuchal scute is grey, forming an ill-defined horizontal band, ventrally straight and dorsally almost reaching the margins of the scutes. Below the dorsal fin spine a narrow, wedge-shaped whitish stripe interrupts this grey band. Upper half of dorsolateral body scutes with deep laying grey pigment.

Narrow, oblique brown lines are visible posterior to most dorsolateral body scute margins, and on the upper halves of the 12 or 13 first ventrolateral body scutes. Nearly no pigment is visible on the midline of the body.

An ill-defined, unpigmented area is present between the dorsoposterior orbital margin and the anterior margin of the nuchal scute.

Dorsal, adipose, and caudal fins with incon-

Table I. Morphometric data of *Brochis britskii* n.sp. (A-C), and of *Brochis multiradiatus* (Orcés-V., 1960) (D-G).

	A	B	C	D	E	F	G
status	holotype	paratypes	paratypes	holotype	---	---	---
N	1	8	2	1	1	6	1
locality	Poconé	Poconé	Miranda	Garza Cocha	Yarina Cocha	Morona Cocha	Humaita
sl(mm)	71.1	66.8-74.3	73.8-76.9	75.8	79.7	65.3-71.1	71.2
sl/bd	2.2	2.3- 2.4	2.2- 2.3	2.3	2.5	2.3- 2.4	2.3
sl/bw	3.8	3.8- 4.1	3.9- 4.0	4.0	4.2	3.8- 4.1	4.2
sl/l _{ds}	4.7	4.5- 5.2	4.6- 5.3	4.4	---	4.0- 4.6	4.0
sl/l _{ps}	3.5	3.3- 3.6	3.1- 3.7	3.3	3.9	3.3- 3.6	3.3
sl/hl	2.9	2.9- 3.2	2.8- 2.9	2.7	2.8	2.5- 2.6	2.7
hl/sn	1.9	1.7- 2.0	1.8	1.6	1.6	1.6	1.7
hl/l _{bo}	4.1	3.9- 4.2	4.1- 4.2	4.3	4.5	4.5- 4.8	4.4
hl/wi	2.2	2.0- 2.3	2.0-2.1	2.6	2.5	2.5- 2.6	2.3
hl/ca	4.1	5.2-10.0	12.9-16.7	4.4	5.1	5.3- 6.3	4.8
hl/dcp	2.3	2.2- 2.5	2.3- 2.4	2.7	2.5	2.4- 2.8	2.6

spicuous greyish coloured pigment. Branched caudal fin rays with faint chestnut coloured distal ends. Pectoral, pelvic, and anal fins unpigmented.

No variation in the colour pattern of the paratypes from Poconé is worth mentioning.

The ground colour of the two paratypes from Miranda is whitish.

Etymology.-

With pleasure we name *Brochis britskii* in honour of Dr. Heraldo A. Britski.

Brochis multiradiatus (Orcés-V., 1960)
(figs. 5-7; table I, D-G)

Chaenothorax multiradiatus Orcés-Villagomez, 1960: 3-6, fig. 1 (original description, based upon the single holotype).

Brochis multiradiatus; Nijssen & Isbrücker, 1970: 166-167, figs. 10-11, 12a (holotype).

Material examined.-

ECUADOR: USNM 200739 (holotype), SL 75.8 mm, eastern tributary of Río Lagartococha, near the town of Garza-Cocha, upper Río Napo system, coll. M. Olalla, XI-1958.

PERU: ZMA 107.891 (one), SL 79.7 mm, Dept. Ucayali, Prov. Coronel Portillo, Río Ucayali drainage, caño between Yarina Cocha and Cachibo Cocha, about 8 km NW of Yarina Village (08°20'S, 74°35'W), coll. P. de Rham, H. Nijssen, H.-J. Franke, S.O. Kullander & C. Villanueva, 20-VIII-1981; ZMA 107.892 (six), SL 65.3-71.1 mm, Dept. Loreto, Prov. Maynas, Río Nanay drainage, Morona Cocha, W of Iquitos (03°45'S, 75°15'W), coll. H. Nijssen & H.-J. Franke, 28-VIII-1981.

BRAZIL: MZUSP 26822 (one), SL 71.2 mm, Est. Amazonas, Igarapé Joari, Humaita (07°33'S, 63°01'W), coll. U. Caramaschi et al., 14-VII-1975.

Description.-

Subsequent to Orcés' original description (1960), data based upon the holotype were given by Nijssen & Isbrücker (1970) in comparison with *Brochis splendens* (De Castelnau, 1855). These morphometric data are repeated for comparison in table I, D-G.

The holotype (from Ecuador) has 17 branched dorsal fin rays, like one of the specimens from Peru (ZMA 107.892), and the specimen from Humaita. One specimen from Peru (ZMA 107.892) has 15 branched dorsal fin rays, whereas the four other specimens in this sample and the specimen from Peru (ZMA 107.891) have 16 branched dorsal

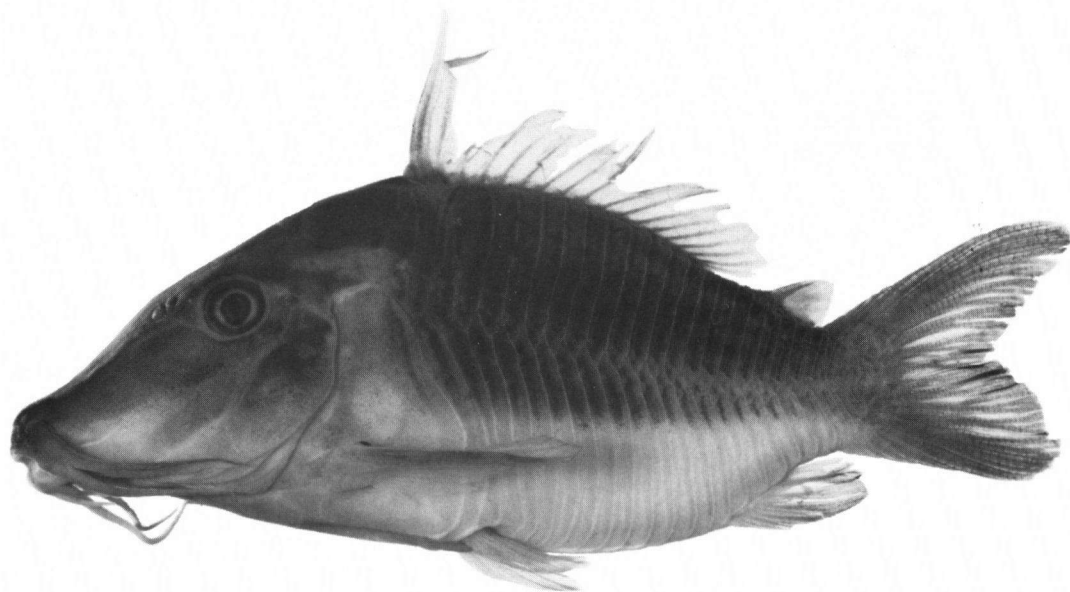


Fig. 5. *Brochis multiradiatus* (Orcés-V., 1960) from Morona Cocha, Peru (ZMA 107.892, SL 71.1 mm). Photo by L.A. van der Laan.

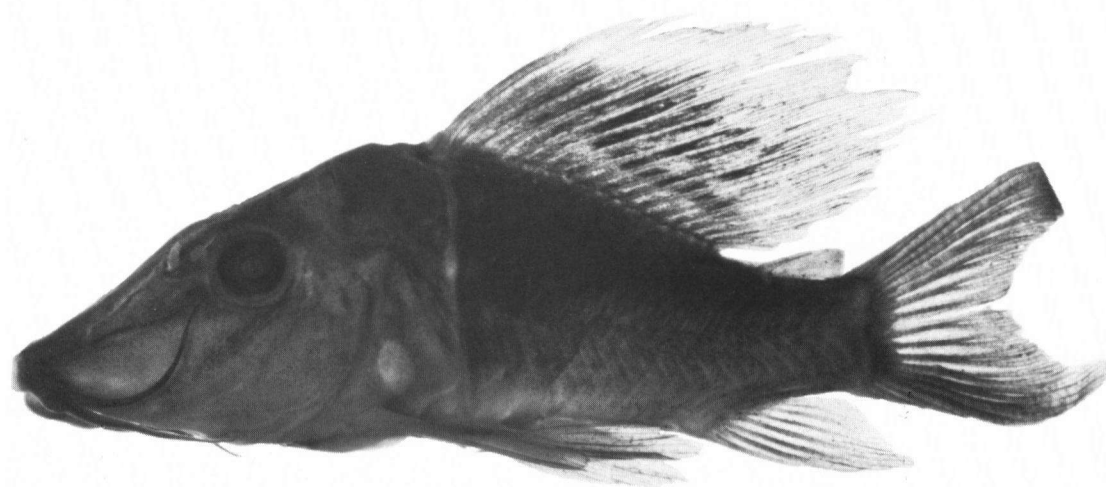


Fig. 6. *Brochis multiradiatus* (Orcés-V., 1960), aquarium specimen; juvenile (USNM unreg., SL 41.2 mm) showing the high dorsal fin. Photo by L.A. van der Laan.



Fig. 7. Localities where *Brochis britskii* n.sp., and *Brochis multiradiatus* (Orcés-V., 1960) were collected. T indicates the type-locality.

fin rays.

Variation among the available specimens of *Brochis multiradiatus* is considerable in the extent of ossification of the sides of the snout, and in the intercoracoid area.

In the holotype (SL 75.8 mm), an ill-defined shield covers a small part of the sides of the head, below and in front of the eyes. Numerous imbricate scutelets of irregular size and shape are present in the intercoracoid area. They increase in size anteriorly, reaching to about the inner points of the branchiostegal membrane.

In the specimen from Yarina Cocha, Peru (ZMA 107.891, SL 79.7 mm) both sides of the snout

are completely covered by a pair of large shields, of which the anterior shields are triangular with a rounded outline anteriorly. These shields are covered with skin, thus not well visible. The intercoracoid area is broad and covered with dermal ossifications as in the holotype, extending into a large shield reaching halfway the distance between the base of the pectoral fin spines and the tips of the mental barbels. This shield shows irregular sutures; its outline is A-shaped, its anterior tip rounded.

This specimen from Yarina Cocha is pigmented with dark grey: snout - including upper rictal

barbels - most of the head, body above the dorsal half of the ventrolateral body scutes, spine and rays of the dorsal fin, adipose fin, and base and sides of the caudal fin. Distal end of inner caudal fin rays chestnut brown. The greater part of the first three pectoral fin rays is dark grey, just like the middle of the first four branched anal fin rays. The wedge-shaped marking below the dorsal fin spine base is lighter than its surroundings. Lower half of ventrolateral body scutes unpigmented.

The six specimens from Morona Cocha, Peru (ZMA 107.892, SL 65.3-71.1 mm) show incompletely developed ossifications on the sides of the snout, reminiscent of the holotype. The ossifications in the intercoracoid area do not extend as far as in the specimen from Yarina Cocha.

The pale wedge-shaped marking below the dorsal fin spine is in some of these specimens more conspicuous than in the remaining specimens. The anal fin rays are chestnut coloured. The first two branched dorsal fin rays are considerably longer than the remaining rays, being almost as long as the dorsal fin spine.

The specimen from Humaíta (MZUSP 26822, SL 71.2 mm) has the sides of the head covered like the Peruvian specimen from Yarina Cocha. The intercoracoid area has (anterior to the base of the pelvic fins) minute, isolated roundish ossifications, which become gradually more numerous and larger anteriorly. The intercoracoid area has a few irregular polygonal scutelets at a vertical from the pectoral fin spine insertions. These scutelets reach a large shield with a median suture, almost reaching the anterior margin.

Aquarium specimens.-

ZMA 111.195 (one, leg. F. Wolter, purchased in 1969), ZMA 111.415 (one, leg. R.C. Bowes, 1972), ZMA 107.893 (thirteen, leg. Catfish Association Great Britain, between 1978 and 1983), SL 52.6-90.0 mm. USNM unregistered (three, 1974), SL about 39.7-41.2 mm.

Subsequent to the original description of *Brochis multiradiatus*, specimens were imported as aquarium fish, reminiscent of - and most probably identical with - this species, usually accompanied by more numerous specimens of *Brochis*

splendens. Since no locality data are known, there is little point to examine these specimens thoroughly.

The smaller specimens in ZMA 107.893 (SL about 50 mm) have no dermal ossifications on the sides of head and snout, and have a naked intercoracoid area. The three specimens in USNM listed above, are in poor condition. The body scutes are in an initial stage of development in the largest specimen (SL 41.3 mm), and are not yet developed in the two smaller specimens. Below the dorsal fin spine insertion, a narrow, vertical unpigmented bone is present causing the pale wedge-shaped marking underneath the body scutes in adults. The ground colour of body and fins is reddish brown. The largest specimen has a high dorsal fin with numerous small, dark markings (fig. 6).

DISCUSSION

Brochis britskii seems to be most closely related to *B. multiradiatus* (Orcés-Villagomez, 1960). *B. britskii* is unique among Callichthyidae by its shield, that completely covers the head ventrally. It is reminiscent of *Brochis splendens*, with which it shares a short and roundish snout (*B. multiradiatus* has a long and acute snout). Aside from the ventral head shield, *B. britskii* differs from *B. splendens* mainly by its more numerous branched dorsal fin rays (15-18 against 10-12 in *B. splendens*), and by its larger maximum size (up to 78.6 mm SL against up to 64.7 mm in *B. splendens*).

Brochis multiradiatus was hitherto known from the holotype only. It has 17 branched dorsal fin rays. Additional specimens (eight with locality data, and several imported aquarium specimens) are at hand now. They have 15-17 branched dorsal fin rays. The holotype of *B. multiradiatus* is 75.8 mm SL; the largest specimen (without locality data) is 90.0 mm SL.

Brochis multiradiatus differs in many morphometric characters from both *B. splendens* and *B. britskii*. Some specimens have a naked intercoracoid area, whereas others (usually the larger ones) possess imbricate intercoracoid scutelets posteriorly, and quite large dermal ossifica-

tions anteriorly (reminiscent of the ventral head shield in *B. britskii*, albeit never so large).

The three *Brochis* species have a similar pigmentation. All have the main part of the dorsolateral body scutes with a broad, horizontal grey band, interrupted by an unpigmented (whitish) wedge-shaped vertical marking below the dorsal fin spine.

REFERENCES

- CASTELNAU, F. de, 1855. Animaux nouveaux ou rares recueillis pendant l'expédition dans les parties centrales de l'Amérique du Sud, de Rio de Janeiro à Lima, et de Lima au Para; exécutée par ordre du gouvernement français pendant les années 1843 à 1847, sous la direction du comte Francis de Castelnau.- i-xii, 1-106, pls. I-L (Bertrand, Paris).
- COPE, E.D., 1871. [Prof. Cope demonstrated some anatomical points of importance in the classification of some of the siluroids of the Amazon, ... etc.]- Proc. Acad. nat. Sci. Philadelphia, 23: 112.
- , 1872. On the fishes of the Ambyiacu River.- Proc. Acad. nat. Sci., Philadelphia, (n. ser.) (1) 23: 250-294, pls. III-XVII.
- , 1878. Synopsis of the fishes of the Peruvian Amazon, obtained by Professor Orton during his expedition of 1873 and 1877.- Proc. Amer. philos. Soc., 17 (101): 673-701.
- NIJSSSEN, H. & I.J.H. ISBRUCKER, 1970. The South American catfish genus *Brochis* Cope, 1872 (Pisces, Siluriformes, Callichthyidae).- *Beaufortia*, 18 (236): 151-168.
- ORCÉS-VILLAGOMEZ, G., 1960. Peces ecuatorianos de la familia Callichthyidae, con la descripción de una especie nueva.- *Cienc. Nat.*, 3 (1): 1-6.

Dr. H. Nijssen,
 Dr. I.J.H. Isbrücker,
 Instituut voor Taxonomische Zoölogie,
 (Zoölogisch Museum),
 Postbus 20125,
 1000 HC Amsterdam
 The Netherlands.

received : 9.VI.1983.
 distributed : 21.X.1983.